

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2004-320679

(43)Date of publication of application : 11.11.2004

(51)Int.Cl.

H04B 1/713 H04J 11/00

(21)Application number : 2003-115459

(71)Applicant : NATIONAL INSTITUTE OF  
INFORMATION & COMMUNICATION  
TECHNOLOGY

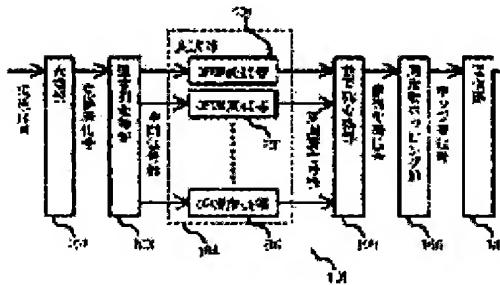
(22)Date of filing : 21.04.2003

(72)Inventor : HAMAGUCHI KIYOSHI

(54) APPARATUS AND METHOD FOR RADIO TRANSMITTING AND RECEIVING, AND PROGRAM THEREOF

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a radio transmitting apparatus which is suitable to reduce the transmitting errors even if the amounts of interferences are different for the slots of a frequency hopping transmission.



**SOLUTION:** The converter 102 of the apparatus 101 for transmitting Walsh-Hadamard transforms a transmitting signal. A serial-parallel converter 103 serial-parallel converts the transmitting signal. A modulator 104 OFDM-modulates the signals. A parallel-serial converter 105 parallel-serial converts the signals. A frequency hopping unit 106 frequency-hops the signal. A transmitting unit 107 transmits the signal. Meanwhile, the receiving unit of the apparatus for receiving receives the signal transmitted from the apparatus 101 for transmitting. A frequency de-hopping unit frequency de-hops the signal. The serial-parallel converter serial-parallel converts the signal. The demodulator OFDM-demodulates the signals. The parallel-serial converter parallel-serial converts the signals. An inverter performs the signal to inverse Walsh-Hadamard transforms to obtain a transmitting signal.